

Coal (Ind.)

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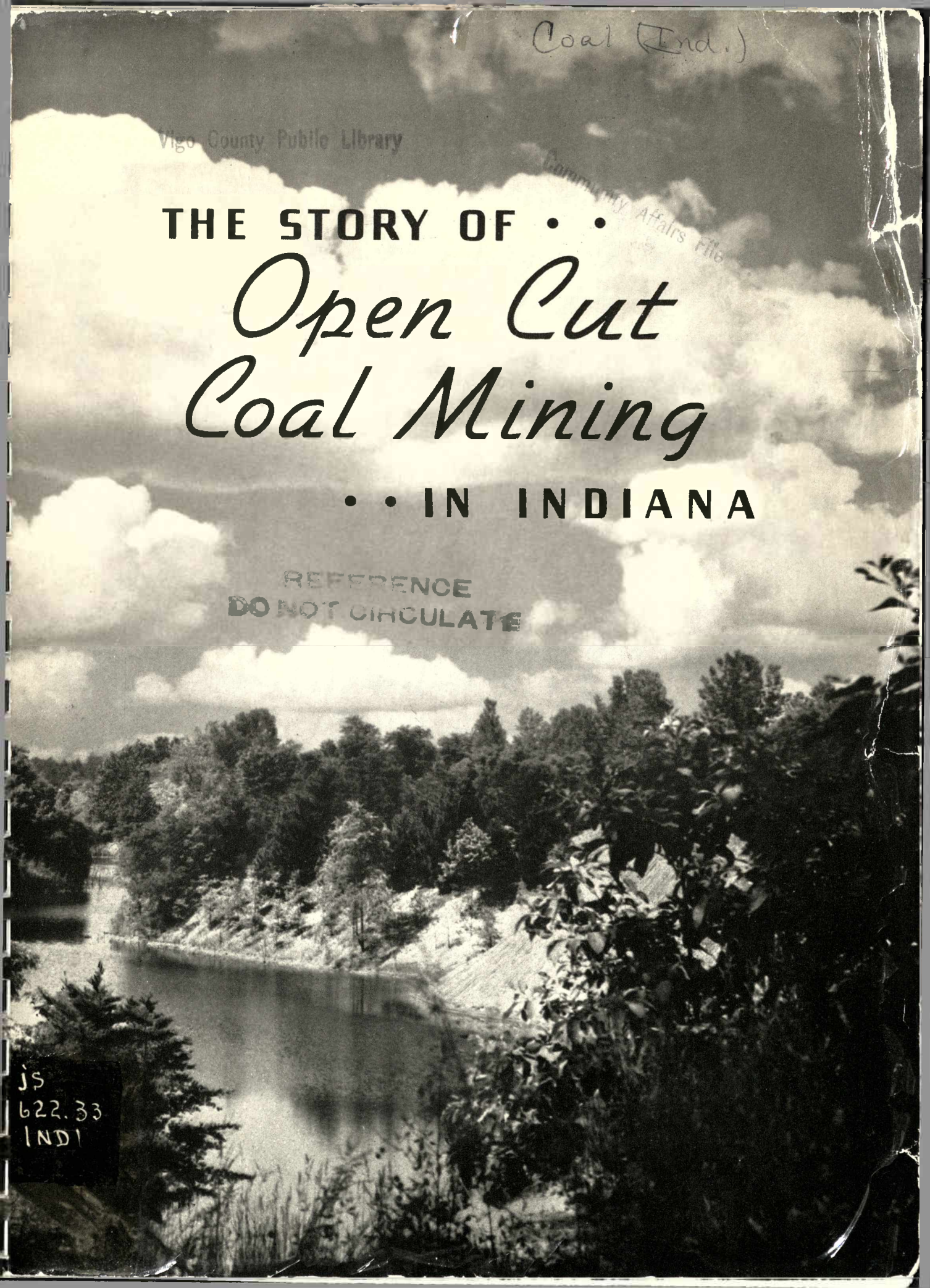
THE STORY OF • •

# *Open Cut Coal Mining*

• • IN INDIANA

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A Planned Forest of Indiana.

THE STORY OF  
OPEN CUT COAL MINING  
IN INDIANA

INDIANA COAL PRODUCERS ASSOCIATION

Michael Scollard, Secretary

524 GRAND OPERA HOUSE BUILDING . . . . . TERRE HAUTE, INDIANA

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INDIANA COAL PRODUCERS ASSOCIATION

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## FOREWORD

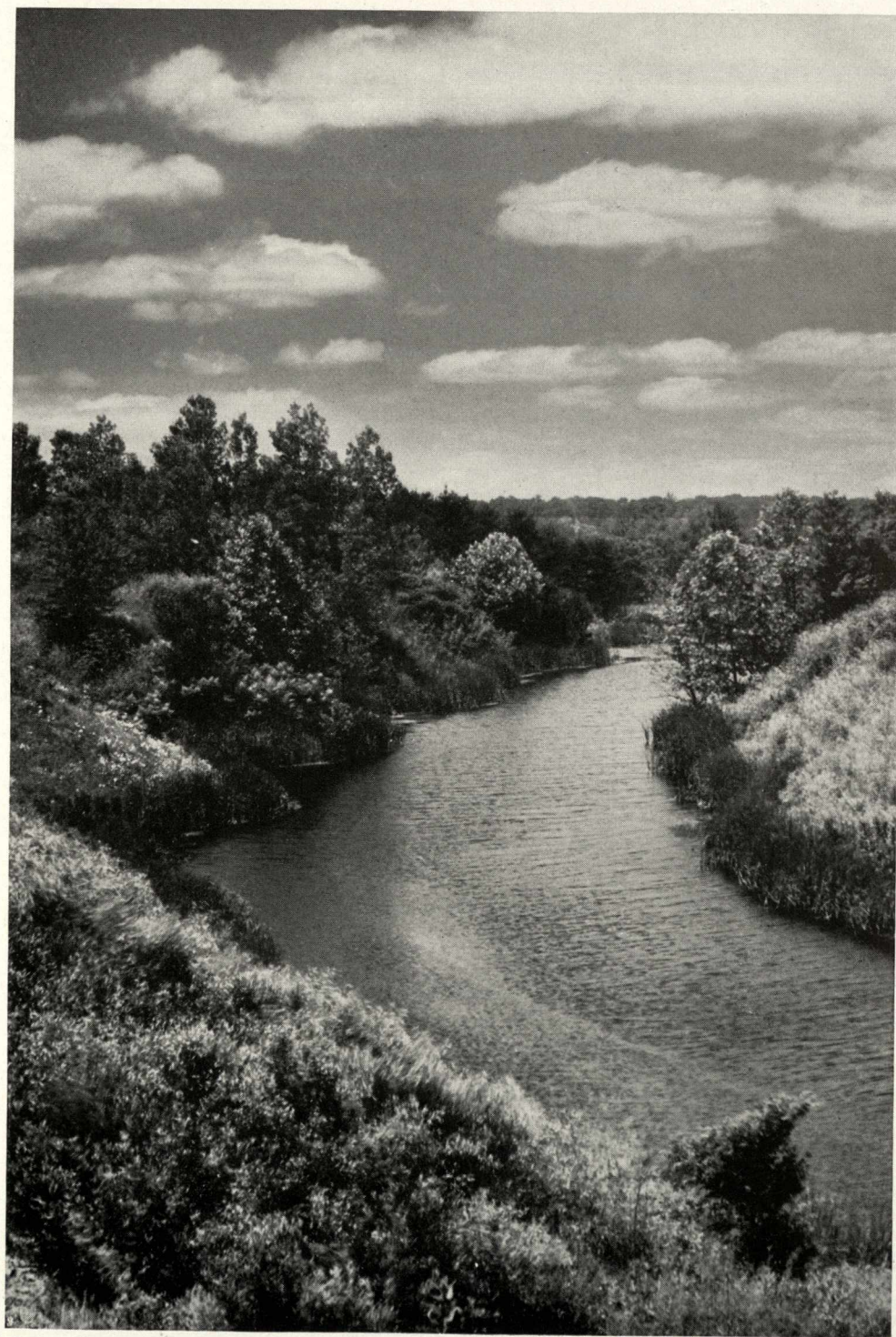
In presenting this booklet to the people of Indiana and other friends of the Mining Industry, it is the hope of the Indiana Coal Producers Association that it will come to them as an instructive and educational treatise on the type of coal production known as the Open Cut Method.

Inasmuch as this mode of mining coal on a commercial basis has developed only within the last thirty years in Indiana, the methods, processes and economics are unfamiliar to many.

To acquaint the public with this modern manner of bringing coal to the surface, or rather, bringing the surface down to the coal, this booklet has been prepared.

An acknowledgment of appreciation is made for the wise counsel and advice of Mr. James W. Bristow, Secretary of our sister Association in Illinois, where conservation works of a similar nature are being conducted.

HARRY C. HYATT  
Director of Conservation  
INDIANA COAL PRODUCERS ASSOCIATION





## THE ORIGIN AND HISTORY OF COAL

Coal is a compact mass of plants altered through decay, the final product of which is mainly carbon. Hence the name Carboniferous is given to that age of the world two or three hundred million years ago when trees and giant tree ferns grew here and made up the vegetable growth from which coal is formed.

It is computed that two or three hundred years of continuous growth, death and partial decay of the plant substance was necessary to create a foot in thickness of our Indiana coal. As these layers of vegetable matter through some subterranean convulsion were lowered beneath the surface of the ocean waters, sedimentary deposits were made upon the beds. Shale, slate and sometimes sandstone are always found directly above our bituminous coal sealing in the gases which were formed as the material lay there ageing and later supplying the gases and bright blaze which is created when this type of coal is burned. On top of the shale or slate which is directly above the coal, are layers of clay or sand or soil its thickness varying in this state from several hundred feet to nothing or where the coal outcrops at the surface.

Coal was referred to by Greek scholars three centuries before Christ and it is a matter of record that its use was known in England at least as early as 852 A.D. Mines were in operation there three hundred years before our continent was discovered.

Coal was first discovered in America in what is now the adjoining state of Illinois. The journal published by Joliet and Marquette shows that coal was found near what is now Utica, Illinois. Later, Father Hennepin, a priest with LaSalle's expedition, mentioned in his book which was published in England in 1689, that coal had been discovered near the Illinois River.

Although an actual coal mine was not in operation on this continent until 1750, near Richmond, Virginia, we of Indiana can not help but be interested in the fact that it was near here that coal was first discovered in America.



## THE PLACE OF INDIANA IN THE INDUSTRY

There are commercial coal deposits in thirty two states of the Union extending from Pennsylvania in the east to Washington on the west and as far south as Alabama, Texas and New Mexico.

Indiana ranks sixth among the states in coal production being exceeded by West Virginia, Pennsylvania, Illinois, Kentucky and Ohio in the order named.

## NEW USES FOR COAL

Though other fuels such as oil and natural gas are competitive with coal as a means of heating, new and romantic uses are being found for coal and its by-products in other industries through chemical research.

Last year, over 46 million tons of coal, three times the output of Indiana were used for chemical purposes. Dyes, medicinal chemicals, synthetic rubber, perfumes, nylon textile fibre all stem from coal and new discoveries are being made every day.

## HISTORY OF OPEN CUT MINING

The process of obtaining coal by removing the overburden is the oldest form of coal mining. Primitive man probably discovered the properties of coal when he inadvertently built his fire on an outcrop of a coal seam and discovered that this "black stone" burned. Later, with shovels, civilized man stripped off the layer of soil covering the coal, and a further development was the use of horse pulled scrapers. Some coal is still produced in this state by this simple method and with no mechanical assistance.

The art of modern stripping is by no means new, for power shovels were in use to remove the overburden as early as 1877. Bituminous coal is mined by this method in twenty states of the Union. The open cut operator has not been restrained by the hand of age-old tradition, and has been free to mechanize as the opportunity arose, and has developed this mechanization to a high degree. Every type of coal in the United States is now mined by the open cut method, including anthracite (hard coal), semi-anthracite, semi-bituminous, bituminous, sub-bituminous, and lignite, a younger form of coal mined particularly in the Dakotas.

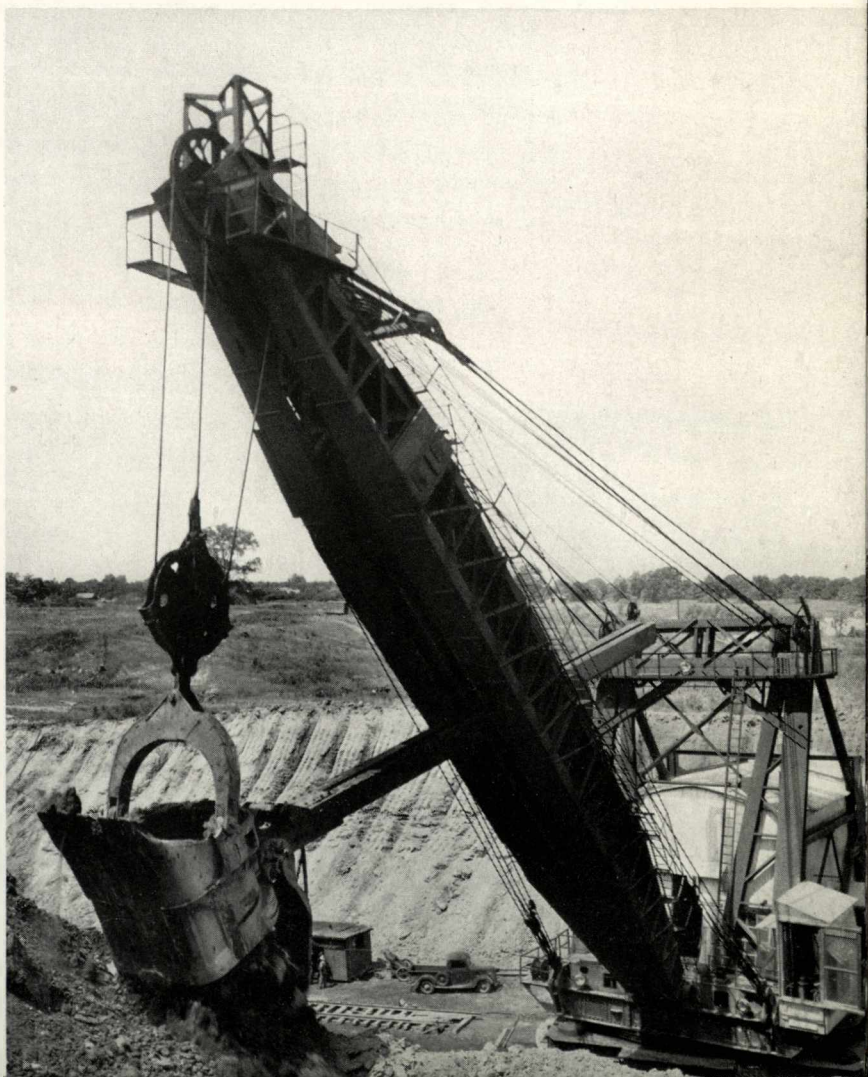
## THE TECHNIQUE OF OPEN CUT MINING

The coal which is mined by the open cut process, due to the character of the ground overlying it, could not be economically mined by underground methods. The layers of earth and often only thin layers of slate and rock immediately on top of the coal are so thin and friable that the expense of timbering to support the roof and the ground above would be prohibitive. Moreover, many of the seams of coal which are uncovered are three feet or less in thickness, which would make it inexpedient for men to mine the coal by hand, much less use the elaborate mechanical aids which are a part of all modern deep mines.

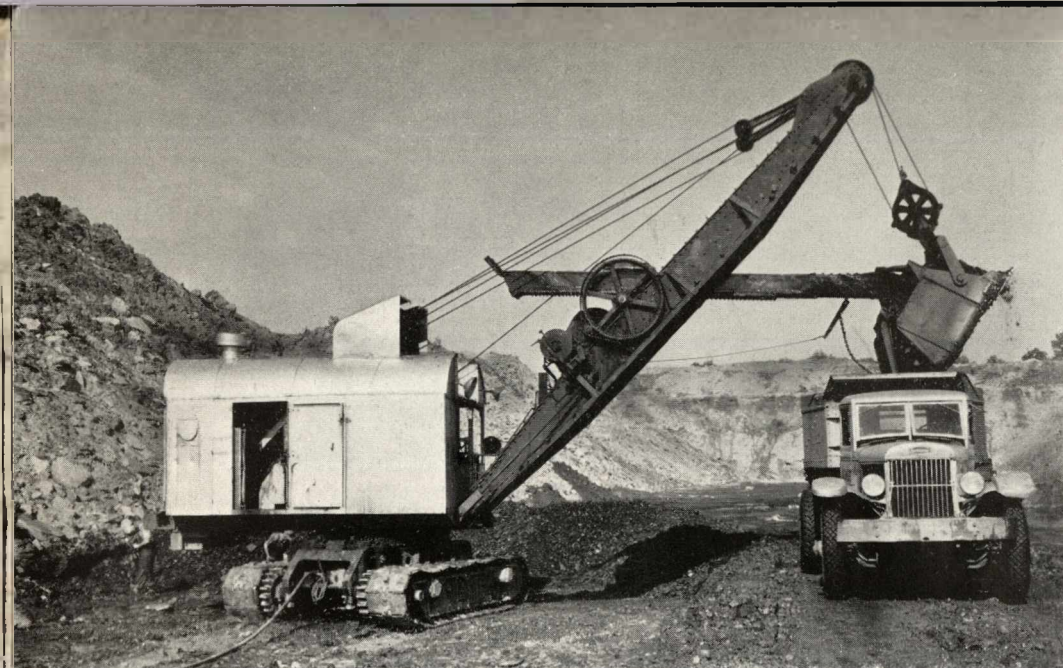
It is this ability to produce coal from deposits which could not be mined in any other manner, and the fact that open cut mining recovers practically 100% of the coal deposit, compared to a much smaller recovery by other methods, that impel the U. S. Bureau of Mines to state, "Strip mining is a means of preventing waste of a natural resource which cannot be replaced". As a natural resource conservation measure, mining by this method is the ideal sought, but not obtained by any other manner of coal production.

The actual production of the coal and its preparation

The Big Shovel sets aside the overburden and exposes the coal seam.



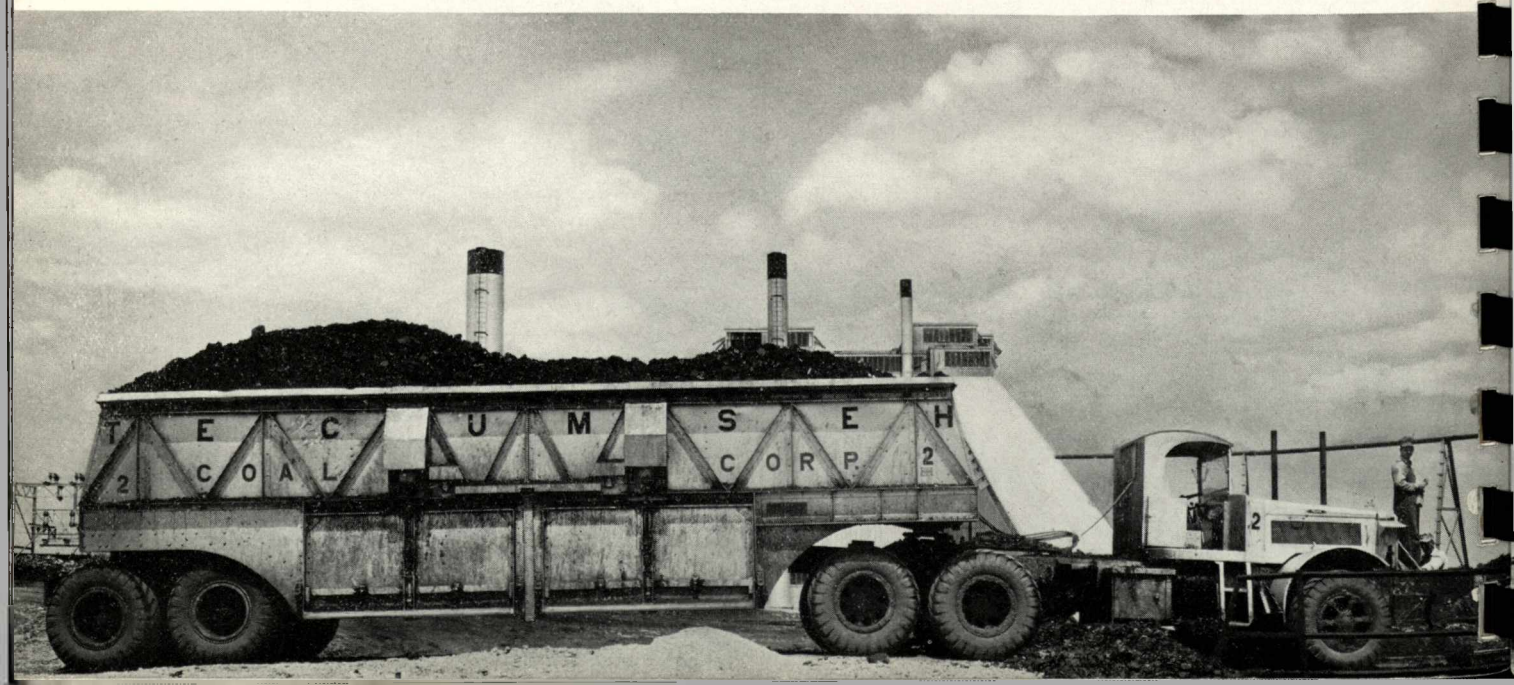




The Loading Shovel  
recovers ninety-five  
per cent of the coal.

for the market embraces several separate and distinct operations. The first of these is uncovering the coal seam so that the coal may be recovered. For this work, large mechanical shovels or drag-lines, operated by steam, electricity or Diesel power, remove the overburden, as the overlying strata are called, and deposit it in more or less parallel ridges. Before the overburden can be set aside it is necessary to break up and loosen the shale and limestone which were laid down on top of the coal while it was still vegetable matter. Holes are drilled vertically from the surface (sometimes horizontally from the adjacent pit) into the shale and stone and explosives placed in these holes shatter the hard overburden so that it can be handled by the big shovel. After the overburden is removed and set aside, the exposed seam is carefully cleaned in order that the

Railroad cars or trucks transport the coal to the Tipple or Preparation Plant.





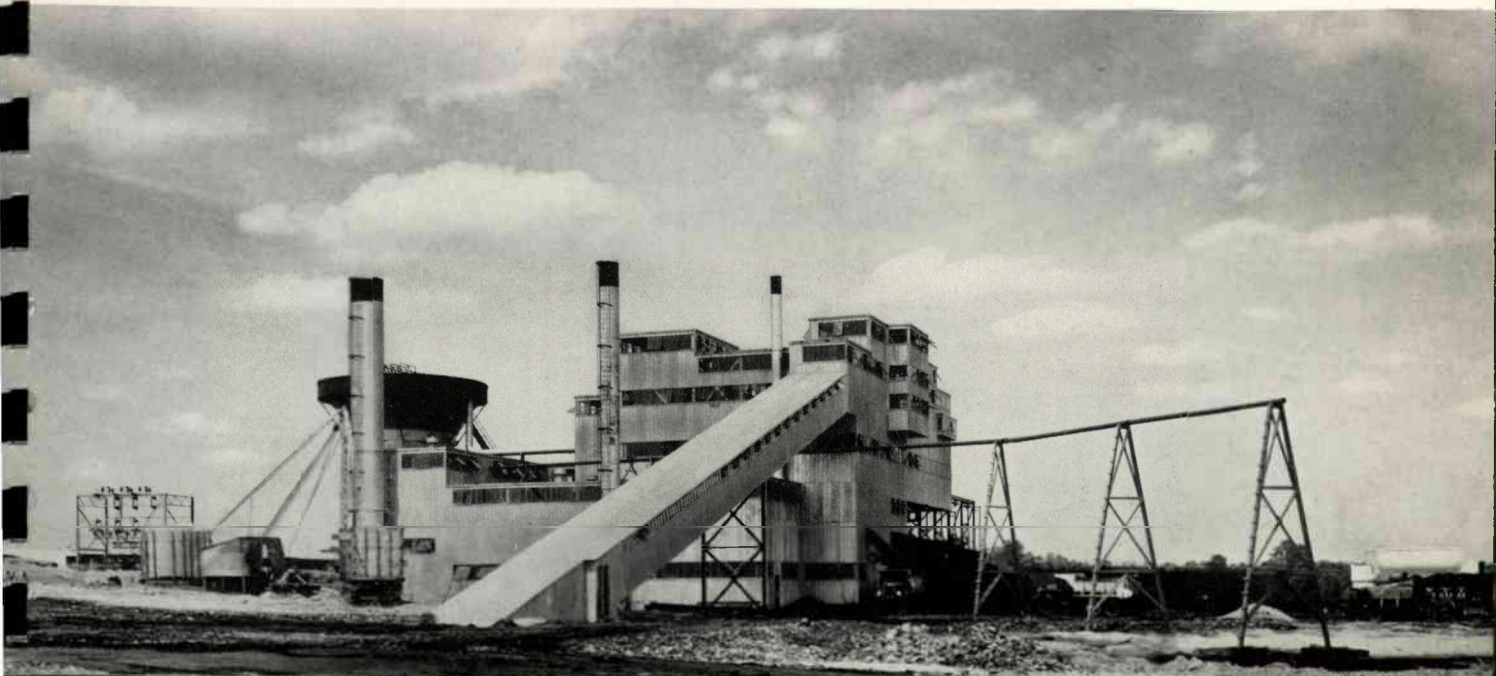
coal will not be mixed with earth or other foreign matter. Hand labor, employing shovels and brooms is supplemented by the use of revolving brushes of the street sweeper type and mechanical scrapers.

The next procedure is the actual removal of the coal from its bed where it has remained these millions of years. This is done by a smaller mechanical loading shovel, which picks up the coal and deposits it in large motor trucks or railroad cars, by which means it is carried to the tippie or preparation plant.

When the coal arrives at the tippie it is in the so-called "mine-run" state, consisting of a mixture of all sizes, and perhaps containing some earth and slate which may have been included within the coal seam. At the tippie it is crushed, cleaned from impurities or refuse, and passed over screens which separate it into the various required sizes. In many plants it is also washed to clean it and remove the finest impurities. In order to make the coal as clean as possible, so that it will hold its own with competitive fuels for domestic use, much of the coal which is prepared for use in homes and buildings is also treated with oil or wax as a preventive of dust.

Some of these preparation plants produce as many as twenty-five different sizes of coal. Some of the complexity of modern coal market demands may be gained from the "Schedule of Recommended Minimum Prices" issued in May of this year by the U. S. Department of the Interior which recognizes 34 different size groups for Indiana coal, from the 7" lump coals down through such graduations as "Raw Double Screened Nut", "Washed or Air Cleaned Double Screened Nut", and so down to "Dry Dedusted Screenings."

**Here the coal is crushed, cleaned, screened and loaded for shipping.**

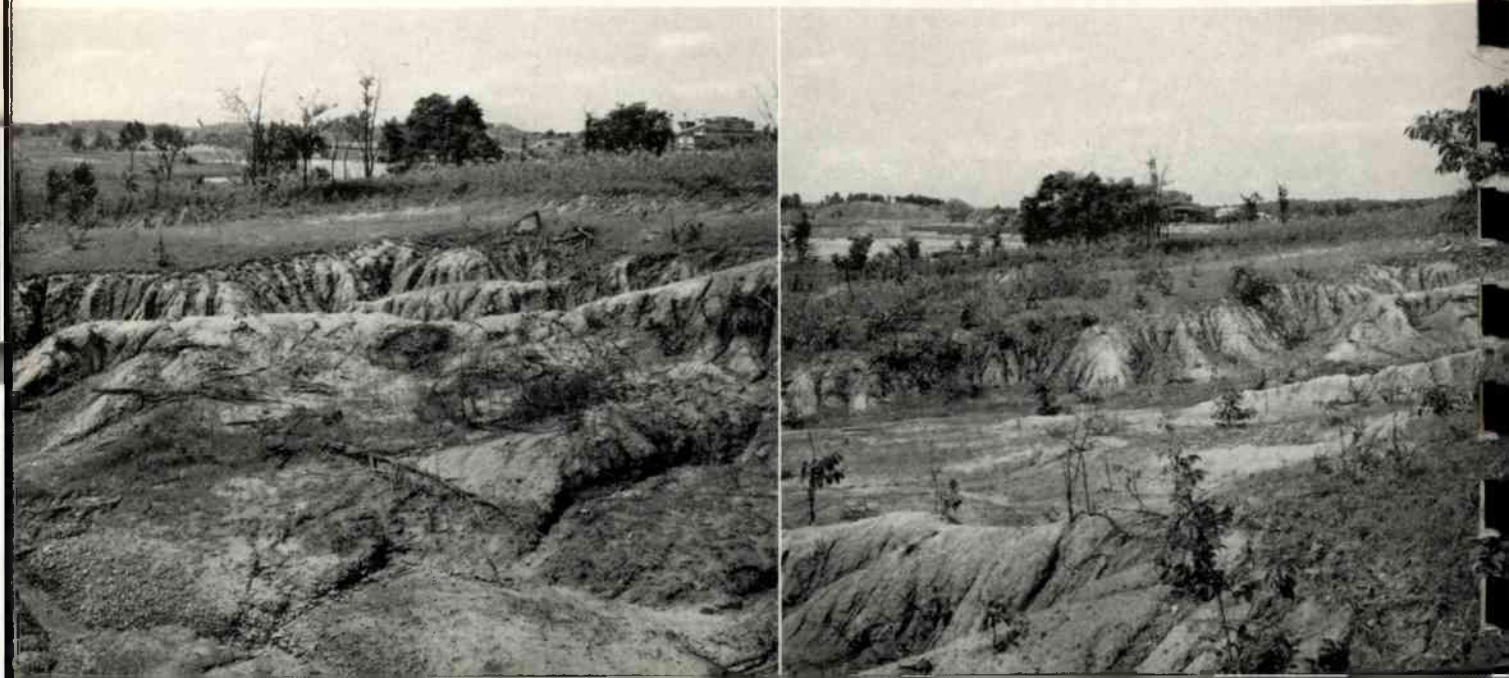


## AGRICULTURAL ANALYSIS OF OPEN CUT MINING

Much of the land in Indiana which is underlaid with coal close enough to the surface to be mined by the open cut method is not good agricultural land. In agricultural parlance, it is marginal or sub-marginal, meaning on the verge of or under the dividing line between fair and poor farm land. For the past several years the Federal government has been taking such marginal and sub-marginal land out of agricultural use and putting it to some other use for which it is better adapted. Some of it is being flooded to bring up the water table of the surrounding land, or is turned back to a more appropriate use as breeding and nesting grounds for wild fowl. In other sections the government is planting or encouraging the planting of trees so that in time forests will take the place of the barren farm lands.

Inasmuch as the area of the total holdings of the mine operators in the nine counties where the open cut method is practiced is only one third of the area of actual idle land in those counties, these operations have brought about or will bring about no agricultural problem. By "idle land" the government designates those acres which are cultivatable, but upon which no crop is grown, and does not include woods, swamps or pasture or rough land which is never cropped. Considering the fact that these estimates were derived from the 1935 Census of Agriculture, and that since that time government agencies have been urging and fostering decreased cultivation of basic farm crops, the ratio of coal mine holdings to idle lands is smaller at the present time.

**Land adaptable to open cut mining is seldom of high fertility.**



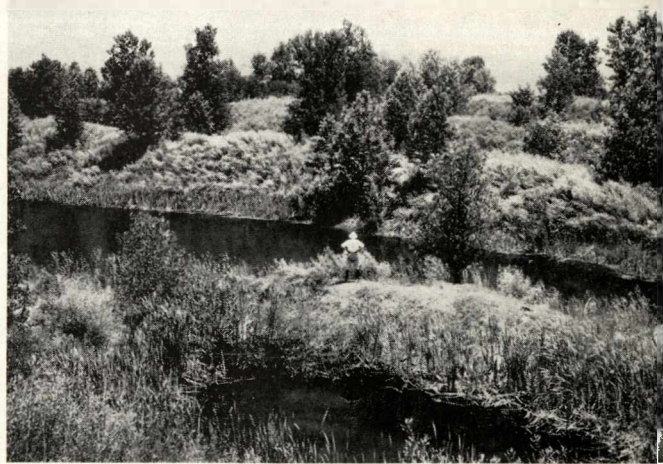


## WATER CONSERVATION

Rain or melting snow runs off into streams and lakes or soaks into the ground. There, it acts as a reservoir of that first essential to animal and vegetable life. The closeness to the surface of this reservoir fluctuates with the seasons and the varying height of its upper surface is termed the "water table". In times of drought, the water table sometimes recedes so deeply that plants cannot secure their necessary moisture, wells go dry and we have our modern "dust bowls".

Such serious moisture conditions will never occur near open cut mined areas. The entire worked territories are in effect gigantic lakes, since due to the hills and closed valleys which have been created, every drop of water which falls there as rain or snow remains.

The government has spent and is spending a great deal of money constructing lakes on private property in this state for the sole purpose of decreasing the quick run-off, and raising the water table. Elaborate studies made in Ohio have shown that in some places the water table has fallen as much as 100 feet, presenting a condition serious to industry and agriculture. Rain and melting snow immediately run off into the streams, instead of penetrating into the earth, a condition caused by the loss of our forests and the increased facilities for quick drainage and run-off on agricultural lands. Industries near open cut mining territories can be assured of an adequate water supply, as can nearby town and rural dwellers.



In time, Nature herself would clothe the slopes with verdure.



But man is impatient and assists her by systematic planting.





# FUTURE USE AND VALUE OF MINED LANDS

## FOREST LANDS

It is the opinion of agricultural economists, soil experts and forestry authorities that the best utilization of coal lands worked by the open cut method is to use them as forest areas. There is a plethora of agricultural land in Indiana and the Middle West. There is an over-abundance of acreage in staple farm crops. With increased mechanization on the farm, and the continued development of seeds of higher yield, the future acreage requirements for food crops will continue to decrease. The only crop scarcity is lumber, and this scarcity and consequent high price of lumber and other forest products may well continue for many years.

At a meeting in December, 1939, Indiana's urgent need of a sustained program of reforestation was outlined by a group of its conservationists before the Joint Congressional Committee at Milwaukee. Their suggested program was the reforestation of approximately a million acres in Indiana within the next ten years, and it was stated that of the 19 million acres of hardwood forest once covering the state, only 4 million acres remained.

Trees grow luxuriantly on the overburden slopes.





Cognizant of the approaching shortage of timber in their state, and of the importance of a systematic reforestation of available lands, the operator members of the Indiana Coal Producers Association have long since determined that their lands from which the coal has been mined are not waste land, but have a definite present and future value as forest and recreational areas. Anyone who has seen the conifer and hardwood plantings of nine or ten years ago in Greene, Vigo, Gibson, Pike and Warrick Counties can well visualize their future, as do the owners.

#### TREE PLANTING

The reforestation program of the Indiana Coal Producers Association is no longer in the experimental stage. The systematic planting was started in 1930, and with the advice and cooperation of the Indiana Department of Conservation has continued since that time. In February, 1940, the Association, realizing the growing importance of this activity and the necessity for trained supervision and advice, selected a trained forester to direct this work, and to coordinate the efforts of the widely scattered properties into a definite policy of conservation and cooperation with the communities in which they operate.

Up to this time over 6 million trees have been planted, most of them having been purchased from the Indiana Department of Conservation, though a few thousand have been purchased from commercial nurserymen in varieties which the state could not furnish.

Trees grow luxuriantly on the overburden slopes, much more rapidly in fact than on unmined land. The large boulders and rocks which are a part of the overburden, and which preclude the use of the ground for agricultural crops, are no hindrance to root and tree growth. A possible explanation for the rapid growth is that the land as upturned is virgin soil, hidden since it was formed. Moreover, the operation of digging it up and redepositing it have aerated and



Nine year old pines.



sweetened it and made it loose and friable for the penetration of the roots. As has been mentioned, there is no lack of moisture, for all of the rain and snow is conserved where it falls, waiting to be available for plant growth.

A large proportion of the trees which have been planted is black locust. This is a fast growing tree which quickly screens the slopes with a cover of green. Moreover, it belongs to the plant family of Leguminosae, as do the clovers, alfalfa and soy beans. The plants of this family have the property of taking nitrogen out of the air and putting it into the soil through their roots. Thus, as nitrogen is a necessary element of plant growth, the locusts are soil builders, beside adding humus to the soil through the decay of their leaves. In a few years, these trees will be large enough for fence posts, a use to which they are particularly adapted on account of their strength and resistance to decay. As they grow older, they will be sought for railroad ties and for mine timbers, to support the roofs of the under-



From seedling to established planting.







"This is an art which doth mend Nature—change it rather, but the art itself is Nature".—Shakespeare.

ground mines where coal is produced by that method. Many thousands of conifers, walnuts and poplars have also been planted.

Studies are now being made to determine a forest and conservation program which can be followed on each of the mined areas. Experimental plots have been started in widely scattered areas where ten different varieties of conifers are planted in strips from the bottom to the top of the slopes. Thus can be determined which varieties are best adapted to overburden planting and what moisture and location conditions are the requirements of the different species. The ten varieties which are being studied are, White pine, American Red pine, Norway spruce, Japanese larch, Douglas fir, Pitch pine, Austrian pine, Banks pine, White spruce and Japanese Red pine.

As an experiment in beautification, one overburden bank in Vigo County has been planted solidly to Redbud and Flowering dogwood. If this experiment succeeds, it will be a beauty spot in the spring and a mecca for motorists, since it faces an important highway, far enough in the distance for perspective and appreciation of mass color.

At a meeting held in March of this year the Directors of the Association approved a plan to plant each spring at least as many acres as were mined the previous year.

### P U L P W O O D

Cottonwoods, poplars, soft maples and some varieties of willow are suitable materials for the manufacture of fine papers. A growth of ten to fifteen inches in trunk diameter on such trees is common within fifteen years, even on poorer soils than those of overburden slopes. Limbs as small as three inches in diameter are utilized in the manufacture of paper pulp.

Inasmuch as many worked properties still have the railroad spurs in their original locations or have such facilities nearby, and with graded roadways remaining from their former coal hauling, these territories have better shipping and hauling facilities than the usual areas where pulpwood is harvested. One large paper mill in Ohio finds it profitable to secure its pulpwood as far away as the Mississippi River. The Association has determined to plant several hundred acres to trees suitable for this purpose in 1941, increasing the yearly planting as the economic possibilities are proved.

### N O C L A S S I F I E D F O R E S T

The Forest Land Classification Act of 1921 permits the "classification" of lands planted to a minimum number of trees per acre, with a drastic cut in the appraisal value for tax purposes as an incentive for forest planting. The State Forester of Indiana is the authority for the statement that "no member Company of the Indiana Coal Producers Association has any classified land in Indiana".

Governmental forest agencies agree that such a systematic forest planting program as is being planned and carried out is economically sound, and that the potential earnings of the reforested areas exceed the income which would be obtained from farming the average grade of land which has coal underneath it close enough to be mined from the surface.





## RECREATIONAL LANDS

The development of lands for recreational areas must of course follow a different plan than a systematic forest program. A dense forest of closely planted trees is no more habitable or hospitable to animals or birds than is a desert. There must be plantings of trees and shrubs which will furnish food. Open spaces must be left where the sun can penetrate and grasses must be grown to provide food and produce seed for the coming winter.

The owners of these lands believe that certain sections of their properties should be developed with the thought that they will be the future recreational

lands of the communities surrounding them. Hunting, fishing, boating, swimming, tramping, riding and picnicing are popular recreations which enthusiasts can visualize as finding a place in a planned recreational development. As Frank A. Kittredge, Director of National Parks of the far west has pointed out many times "the recreational use of land has a financial value to those living in the region".

In carrying out an open cut operation, the last cut made by the shovel is left open and usually develops into a lake. Some of these lakes are over a mile in length and several hundred feet wide. Boats for fishing and pleasure are found on many of the lakes, and some of them are already being used by out-board motor enthusiasts. With a dearth of lakes and water in this section of Indiana these lakes have become an attraction and are much sought sites for summer cottages and year-round homes.

A survey has been made to determine which of the many lakes would be available for public fishing. The qualifications for such a lake are that it shall be accessible, that its banks shall not be so precipitous as to be a hazard, and that it shall be deep enough and pure enough for fish life and propagation. The Indiana Department of Conservation has agreed that it will make a study of these lakes, analyse the requirements and possibilities of each, plant them with aquatic vegetation best adapted to the local conditions and which are necessary for the fish, and stock them with the species of fish best suited to the conditions as found and created. Before such a procedure is followed to conclusion, the Department will either obtain the ownership by gift or will have the assurance that the pond or lake will be available to the public during its present ownership or at least for a number of years.



Desirable cottage sites  
develop on the shores  
of the created lakes.



Even before the overburden banks are covered, the lakes become a new part of the community.



The greater part of the worked areas will be developed as forest lands, for those sections determined upon as recreational areas must be easily accessible to the public, a qualification not required for the forest lands.

The open cut mines are directly in the path of one of the great migratory routes of waterfowl. Ducks and geese making this great flight in spring and fall look down with delight and tired wings upon these waters and are already making use of them. Both quail and pheasant find such worked territory appealing, especially since many of the banks have been seeded to Lespedeza, a splendid ground-covering grass whose seed is relished by them in the winter.

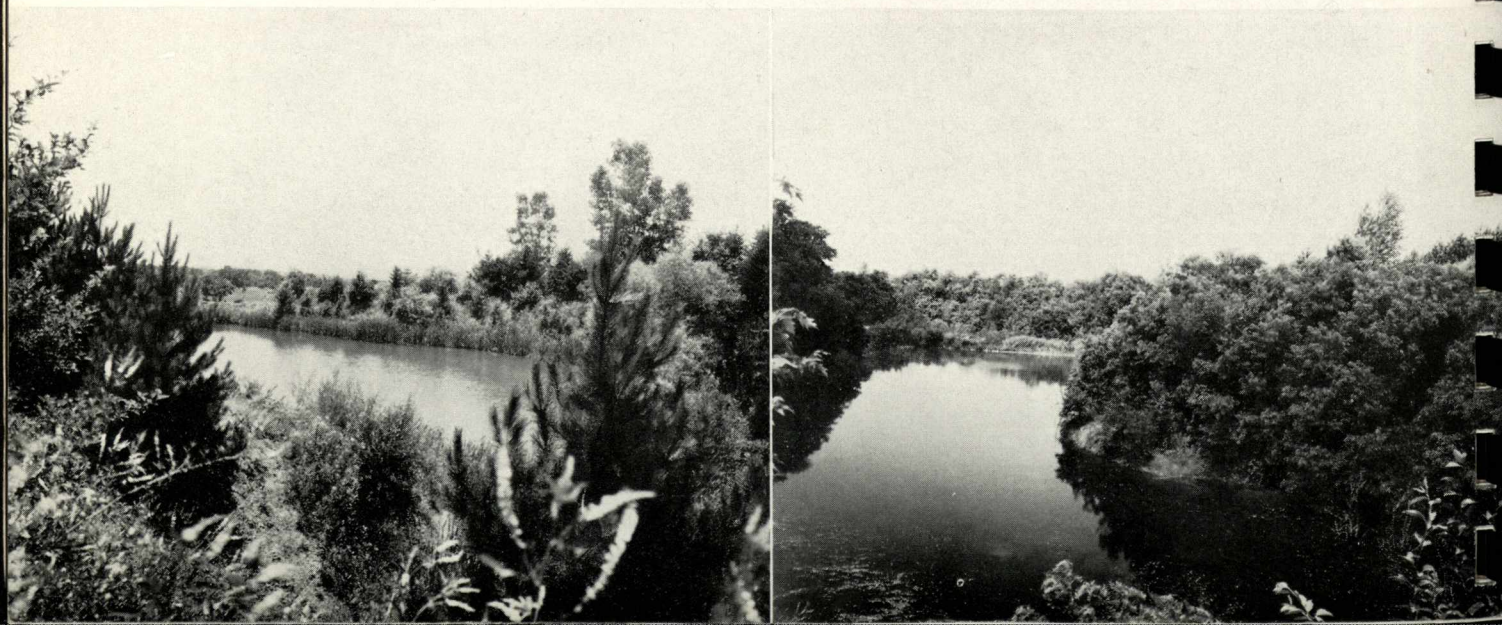
## LINTON MUNICIPAL PARK

Linton, Indiana, a city of 6,500 according to the 1940 census, is regarded as one of the most progressive cities of the Middle West. It has attained this distinction through the leadership, cooperation and vision of its citizens. It is renowned for its well kept homes, its beautiful trees and its parks.

Recently, adding to its already 125 acres of parks, the city requested and secured the gift of over 600 acres of worked land. A considerable portion of this land had already been planted by the former owners, but it was deeded to the city of Linton with the feeling that this community had the faculty to visualize, the energy to accomplish, and the leadership to create and build a park system and a natural recreational center unparalleled by any city of anywhere near its size. This tract adjoins an older park and contains twenty-eight lakes ranging in size from one half acre to one which will be over two miles in length. Many of the lakes are already stocked with fish and for years have been the fishing grounds for local anglers.

The plan of the Park Board, in cooperation with the Community Conservation Club, the Greater Linton Club and the American Legion, each of which is represented on the Board, envisages the creation of their own fish hatcheries in cooperation with the State, the brooding of quail, the building of roads and bridle paths, construction of house facilities for the Legion and Conservation Clubs, the development of skeet and rifle ranges, and facilities for the enjoyment of rowing, canoeing and outboard boating. As a part of this recreational program will be picnic grounds, camping sites and cottages. In their conception of a Community Forest as a part of the development of this area, their thoughts and ideals have been well expressed by President Roosevelt when he said, "I believe some of our communities could profit economically, socially, and spiritually by ownership and operation of their own forests close to home. Development of such local forests would be an important step in the rebuilding of our natural resources and would provide additional outdoor playground for the children of America."

Two of the twenty-eight lakes in the Linton municipal development.







A State fish hatchery in mined territory.

## SCALES LAKE STATE FOREST

As an example for the Linton development, the State of Indiana acquired by gift a tract of 300 acres of worked land on the outskirts of Boonville. By constructing a dam between two overburden banks a large lake has been formed, but outside of this one change, the terrain is the same as left by the big shovel. A road has been built around the lake, fish-rearing ponds have been built and the slopes heavily planted with conifers. Today, the park is the recreational center for Boonville and the surrounding territory. The lake is one of the best fishing grounds in the state; and bathing, fishing and just plain communing with Nature are available to this community.

## GREENE-SULLIVAN STATE FOREST

A few years ago, when the authorities of the Civilian Conservation Corps were attempting to find locations for the housing of these young men, and territories and projects where they could work off some of their boyish enthusiasm in worthy endeavor, preferably along conservation lines, they sought and secured the gift of about 1500 acres of worked land lying in Greene and Sullivan Counties, from a member of this Association. Today, roads, scientific planting, construction of dams to make additional lakes, and beaches are all completed. In a few years this great state forest will be another of the beautiful lake and forest regions of southern Indiana.

## THE HOOSIER FARMER

Mr. Edmond C. Foust, the Editor of the Hoosier Farmer, the official publication of the Indiana Farm Bureau, in the July, 1940 issue, expresses himself poetically when he says in part,

"The Indiana Coal Producers Association, comprising approximately a dozen of Indiana's largest outfits, proudly points to their reforestation program started ten years ago. Cooperating with the state department of conservation, they have planted millions of trees on the rugged terrain of their abandoned strip mines. Spruce, pine, locust and sycamore trees cover the land. Other vegetation naturally follows. Wild life finds favorable quarters and once again there begins a cycle which will reach into another generation. Boy Scouts have assisted in the planting of trees, and now these same Scouts cut Christmas trees each year and place them on the market. The tree thinning process is necessary, the profit aiding in Scout work.

Southern Indiana for generations has looked begrudgingly toward the north part of the state with its hundreds of natural lakes. The trend now changes, for dozens of artificial lakes now dot the southland.

Lakes are being made. Some fill naturally, and others are being dammed. The water ranges from a few feet to 50 feet deep. It is clear and blue. The conservation department is stocking these waters, and the next five years will bring a fisherman's and hunters' paradise to southern Indiana. Cottages and summer homes are being built along these cooling waters and amidst a rugged background not unlike miniature mountain ranges. Men and women seek these places of beauty to repair their physical bodies and to think.

A boy and his dog, a man and his rod and gun, or mother with her knitting in the pleasant shade of these reforested areas, close to nature, will contribute something more beautiful, more useful, to society and gain pleasure at the same time".



"Nature asks nothing more  
than the cooperation of  
men."



## COMMUNITY VALUE OF THE INDUSTRY

Located in the center of past and present open cut mining, the viewpoint of Linton is typical and is probably shared by other cities enjoying the same advantages. The Linton Daily Citizen of March 28, 1940 expressed in an editorial the impressions and convictions of its writer, Mr. J. E. Turner, a former Mayor of Linton and now President of its Citizens National Bank. The message might well be called "The Community Value of a Great Industry".

"Some times we have thought that the stripping of large areas around Linton and the remaking of the landscape by the large steam shovels was a wasteful if not an almost ruinous enterprise.

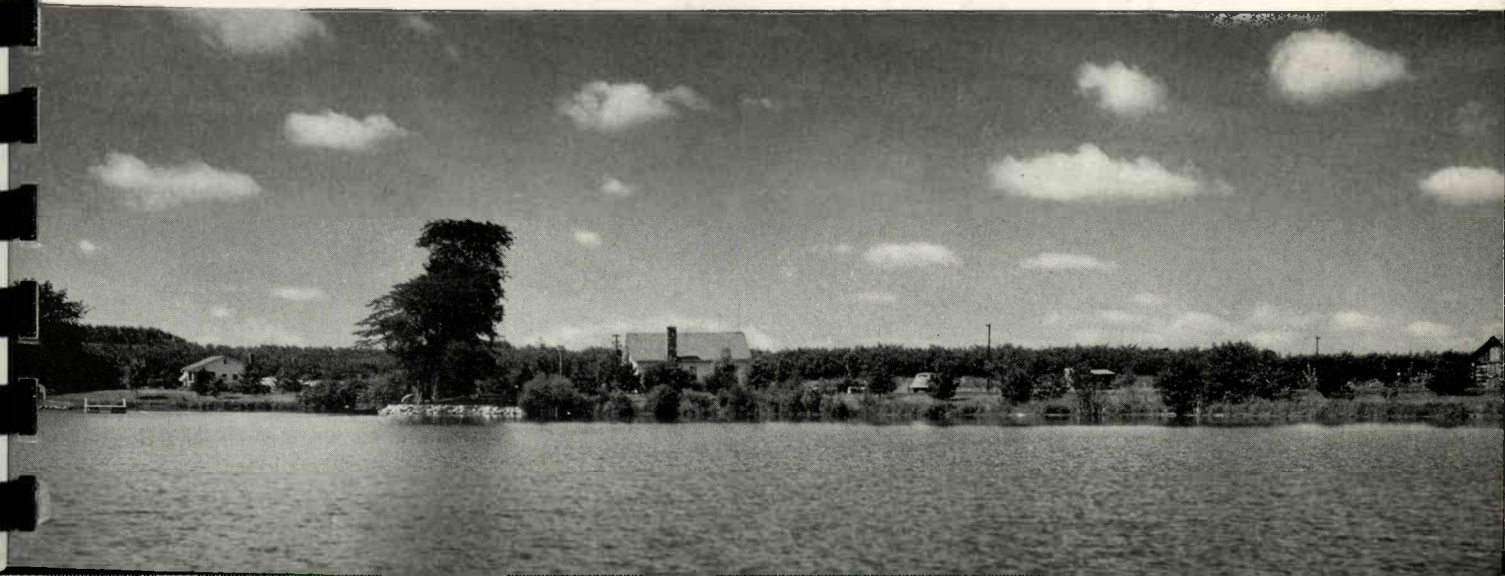
Just when we hear so much about our frontiers being gone and when there is so much being said and done about the conservation of land and of natural resources of all kinds, we were inclined to think that the tearing up of thousands of acres of potential agricultural land was extravagance: that it was 'selling our birthright for a mess of pottage'.

But is it really? In the past fifteen or twenty years we have been enjoying our 'mess of pottage' represented in the thousands of dollars brought into this community from the sale of lands at good prices, and the many thousands more from the payrolls of our employed men in this industry. And so far we have not suffered from lack of income—not noticeably—from the lands taken from our agricultural belt. Furthermore, as years go by, we do not hear so much about the unsightly appearance of the areas 'ravished by the monster shovels'.

Time has worn down the spoil banks, and the planting of trees and the clearing of the waters in the many lakes have transformed much of the landscape into even a more pleasing picture—if we view it in a purely aesthetic way—than it was before.

Since there is no dearth of lands for agricultural purposes and since there is greater production from smaller areas by improved farming methods, more intensive cultivation and use of soil by scientific fertilization and rotation of crops, it does not appear that with all of our stripping 'destruction', that there will ever be need for more land than we have."

Forests and lakes are important factors in flood control.





Wooded hills and valleys and restful water.

## AGRICULTURE OR OPEN CUT MINING

The real measure of the value of any land is its capacity to produce something of value over a given period. Of course, the denominator of such value or wealth, or whatever you wish to call it, is the dollar, whether the production of the land is rent of parking space, bushels of wheat, pounds of wool or tons of coal.

It has been mentioned that in Indiana at least, the land which has coal close to the surface is poor agricultural land. This is in part responsible for the fact that a ten year record of the nine counties where open cut mining is practiced, shows that they are below the average production of the state in corn and wheat yields per acre, the unfertile acres bringing down the county average.

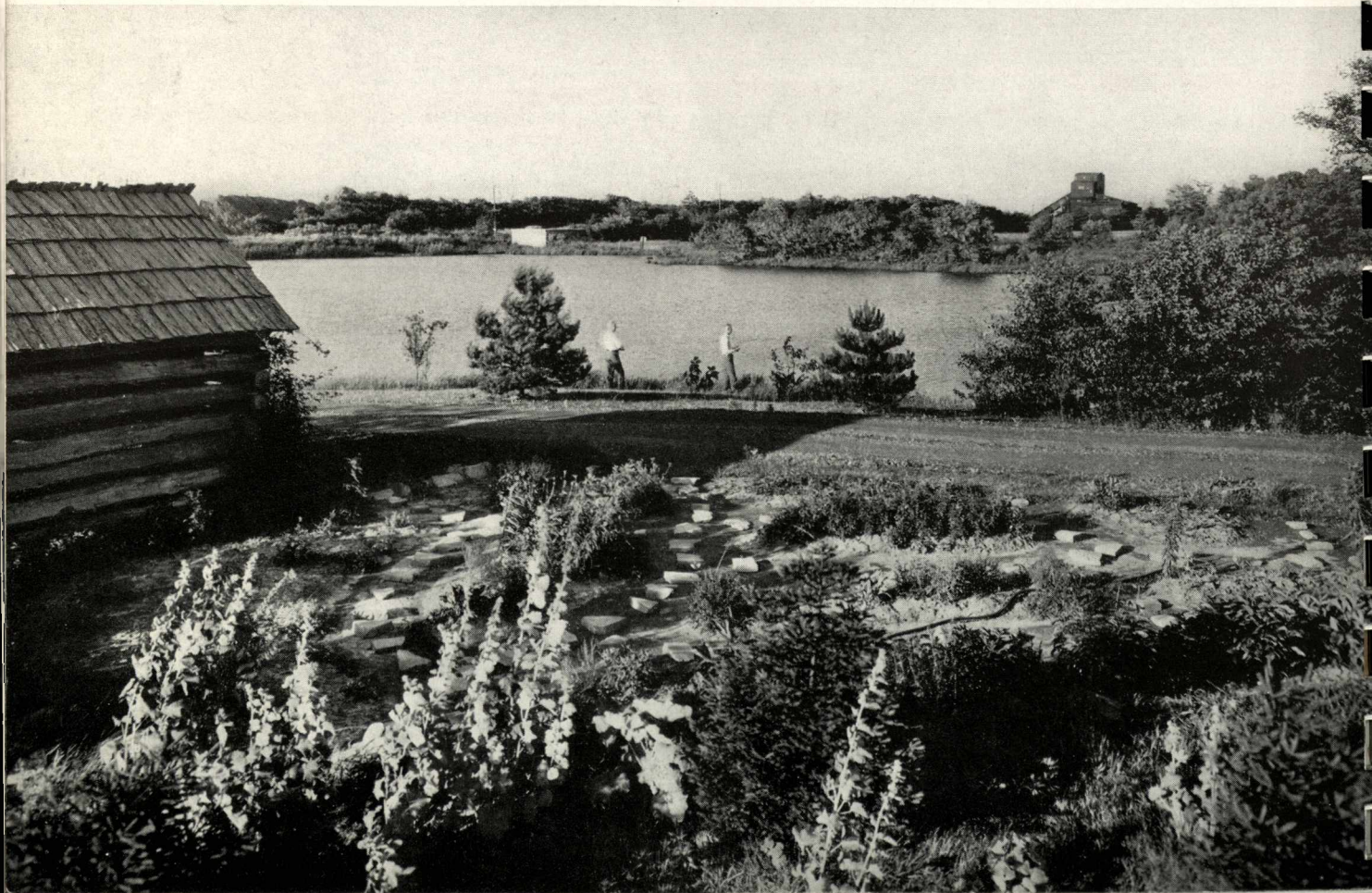
Even if these territories produced the average of the state, the gross income, or the greatest amount of money which could be put into circulation would be \$19 if planted in corn, or \$15 if planted in wheat, basing the calculation on 60c



Mining that land immediately makes circulatable over four hundred times the gross amount that the acre could produce agriculturally. Over two hundred times the value that the farming acre could produce is spent right in the community where the mine is operating. In other words, it would take over four hundred years of continuous, average crops and prices, to compare in community financial benefit, with the results from mining the coal. Compute for yourself, knowing the tax rate in your community, how long it would take an agricultural acre to pay \$411 in state and federal taxes!

However, we do not wait for that period of equality, that two or four hundred years, for in fifteen years if planted in pulpwood, this land will again become a work producer, a "wealth" producer, an agency of employment, a distributor of community benefit. Even long before the "operation expectancy" (the period of time which the mine will operate with its present coal land holdings) which is 34 years for members of the Association, before that span is even half run, the worked over territory will be in production of another useful and necessary commodity, and again with the kindly help of Nature.

Industry and recreation—Work and play—Mine tipple and fishermen.



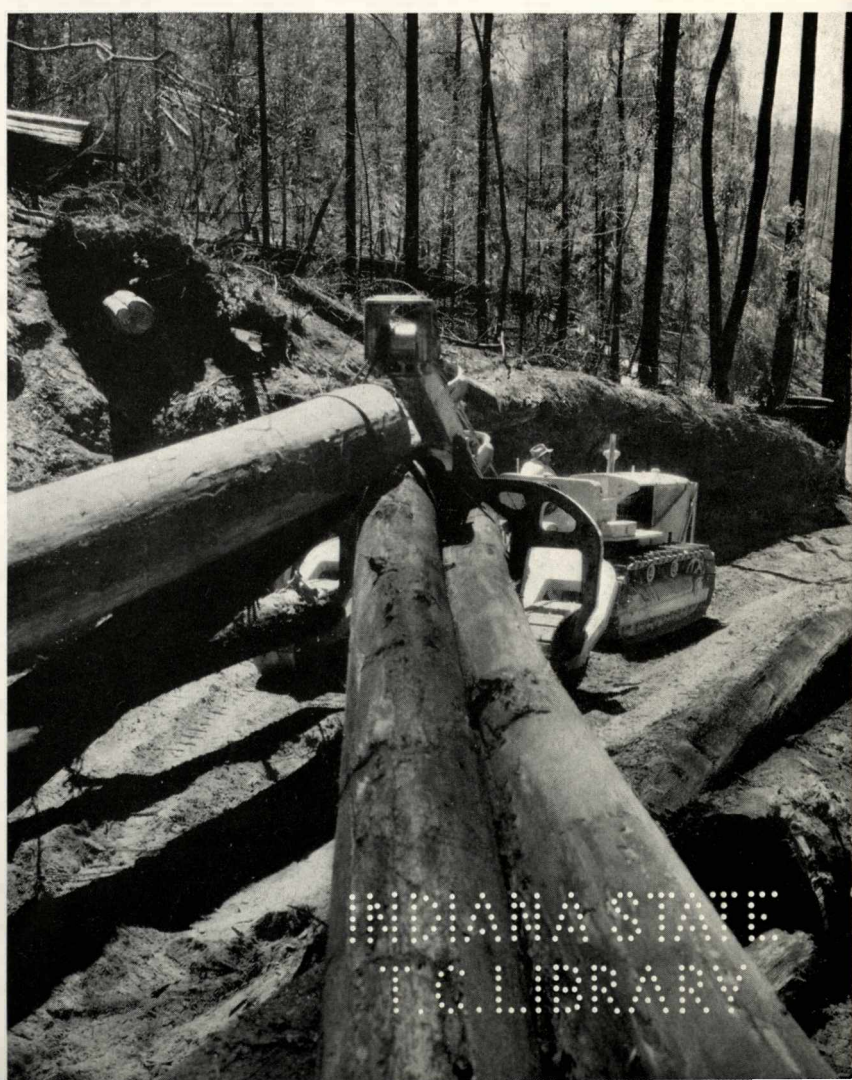


## RUGGED LANDS AND LAKES

To the aesthetically inclined, industry is never beautiful. The belching stacks and glowing converters of the steel mills, the vast excavations of the famous iron ore ranges, the cross country towers of the high tension transmission lines, the depths of the clay and gravel pits, the gob piles of the deep mines, the overburden slopes of the open cut mines, all are scars on the breast of Nature. To others, signs of industry are measured in terms of men employed, cheap and bountiful goods and materials, and in the prosperity and happiness of the community. Of all the familiar wounds and scars which man has made in the name of industry and to obtain the natural resources which nature has knowingly and wisely scattered widely and in variety, the scars of this type of mining are most easily and quickly healed.

There is a period of a few years when the overburden banks are unsightly, but nature during this time is slowly settling them, softening the abruptness and ruggedness of the terrain and storing up the necessary moisture for plant growth. To mechanically smooth the peaks and valley would accomplish no purpose except to increase the cost of coal production, which of course would simply mean that the consumption of coal would decrease, employment in the same proportion would decrease and the use of competitive fuels as oil and natural gas would increase. From the

Steep slopes are no  
obstacle to lumbering.



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aesthetic standpoint nothing would be accomplished. To the lovers of the beautiful, lakes and hills and valleys are more picturesque and inviting than the monotony of a level plateau. The Hoosiers of the flat, level, central and northern parts of our state come to rest their weary eyes, especially in the spring and fall, on the hills and valleys of Turkey Run and Brown County when nature glorifies them with their first green leaves and later sets them ablaze with autumn coloring. Leveling must never be linked with beautification.

Experts agree that this worked land does not have commercial agricultural value except for the growing of timber, which can be a profitable crop under modern forest management. The large rocks and boulders in the overburden would make crop cultivation impossible, and if leveled down all the effects of a "water conservancy district" would be lost to this land and the surrounding country, and no useful purpose could be served.

The U. S. Bureau of Mines states in its bulletin R. I. 3440 "At some properties the tops of the spoil banks have been partially leveled. However, some foresters believe that better results are obtained by planting different species of trees at different elevations along the ridges, as some varieties of tree thrive better in the valleys and others grow better on the ridges and that money often would be spent to better advantage by planting more trees rather than for leveling ridges and valleys."

## CONCLUSION

In this outline of mining practices of the open cut method of coal production, we have stressed the phases which are of general interest to the public. We have presented the mechanical developments which have made possible our contribution to the conservation of our nation's coal reserves, through improved recovery of that essential product by this modern, safe method of mining. We have outlined our program for continued rehabilitation of our mined lands, by means of forest planting and conversion into recreational areas.

As an important section of coal mining, a great basic industry of the Hoosier state, we share our pride of accomplishment with our employees, who are your friends, relatives, customers and neighbors.

The cooperation of operators, employees and the citizens of the communities in which we work is the best assurance that the open cut industry will continue to be a source of pride, profit and satisfaction to those communities and to our great State.

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